

**Amendments to the Claims:**

This listing of claims will replace all prior versions and listings of claims in the application:

**Listing of Claims:**

1 to 23. (cancelled)

24. (currently amended) A system for detecting presence of an organism having at least one enzyme in a sample, comprising:

a vessel for incubating the sample and at least one substrate such that the at least one enzyme can react with the at least one substrate to produce a biological molecule;

a partitioning element that allows partitioning of either said biological molecule or said at least one substrate thereinto;

an excitation light source that irradiates said biological molecule or said at least one substrate partitioned into said partitioning element;

a detector that detects fluorescence of said biological molecule or said at least one substrate partitioned into said partitioning element; and

a control unit;

wherein said detected fluorescence is indicative of presence of said organism in the sample.

25. (original) The system of claim 24, wherein the control unit performs at least one function selected from controlling operation of said system, storing data relating to fluorescence detection, and outputting data relating to fluorescence detection.

26. (original) The system of claim 24, wherein the vessel comprises a removable cartridge for containing the sample and the substrate.

27. (original) The system of claim 26, wherein said partitioning element is disposed in said removable cartridge.

28. (original) The system of claim 24, further comprising a communications unit that relays data relating to fluorescence detection to a communications network.
29. (previously presented) The system of claim 24, wherein said organism is a biological contaminant.
30. (original) The system of claim 24, wherein the sample is selected from water, a biological sample, food, and soil.
31. (original) The system of claim 24, wherein said enzyme is selected from  $\beta$ -glucuronidase and  $\beta$ -galactosidase.
32. (previously presented) The system of claim 29, wherein said organism is selected from *Escherichia coli* and total coliform bacteria.
33. (original) The system of claim 24, wherein said at least one substrate is selected from pyrene- $\beta$ -D-glucuronide, anthracene- $\beta$ -D-glucuronide, pyrromethene- $\beta$ -D-glucuronide, pyrene- $\beta$ -D-galactopyranoside, and anthracene- $\beta$ -D-galactopyranoside.
34. (previously presented) The system of claim 24, further comprising means for calibrating said partitioning element and/or optical components of the system or for monitoring said fluorescence detection, or both.
35. (previously presented) The system of claim 34, wherein said means for calibrating said partitioning element and/or optical components and/or for monitoring said fluorescence detection comprises:
- a fluorophore that partitions into said partitioning element and fluoresces at a different wavelength than said biological molecule;
  - wherein said fluorescence of said fluorophore is detected by the detector; and
  - wherein said control unit uses the detected fluorescence to calibrate the partitioning element and/or optical components of the system or to monitor fluorescence detection of the system.

36 to 53. (cancelled)

54. (new) The system of claim 24, wherein the biological molecule partitions into the partitioning element and the at least one substrate does not partition into the partitioning element.

55. (new) The system of claim 24, wherein the partitioning element comprises a polymer film.

56. (new) The system of claim 55, wherein the polymer film comprises a hydrophobic polymer.

57. (new) The system of claim 55, wherein the polymer film comprises polydimethylsiloxane (PDMS).